REMARKS

Claims 1-6 and 8-21 are pending in the instant application. Claims 12-14, 16 and 19-21 have been withdrawn by the Examiner as being drawn to non-elected inventions.

Claims 1, 8, 9, 15, 17 and 18 have been amended to clarify the subject matter of the present invention. Specifically, claims 1, 8, 9 and 15 have been amended to recite that the composition comprises an additive for platelet preservation, and the term "stored platelets" in claims 15 and 17 have been replaced with the term "preserved platelets." Support for the amendments can be found, *inter alia*, at paragraphs [0071], [0075], [0166], and [0186] of the specification. Claim 18 has been amended to clarify that the method is performed *ex vivo*. Support for this amendment can be found, *inter alia*, at paragraph [0190] of the specification.

New claims 22-24 have been added. Support for new claims 22 and 23 can be found in the specification, *inter alia*, at paragraphs [0071], [0075], [0166], and [0186] of the specification; and support for new claim 24 can be found in the specification, *inter alia*, at paragraph [0190] of the specification.

Applicants submit that no new matter has been added by the amendments and respectfully request that the amendments and remarks made herein be entered and made of record in the file of this application. Following entry of the amendments made herein, claims 1-6 and 8-24 will be pending and under active consideration.

I. THE CLAIM REJECTIONS UNDER 35 U.S.C. § 102 SHOULD BE WITHDRAWN

Claims 1-6, 8-11 and 18 remain rejected under 35 U.S.C. § 102(a) as allegedly being anticipated by Okamoto *et al.* "Effect of chitin and chitosan on platelet," Advances in Chitin Science, 2002, 5:643-9 ("Okamoto") in light of U.S. Patent No. 4,33,289 to Veech ("Veech") and U.S. Patent No. 5,292,524 to Male *et al.* ("Male"). *Inter alia*, the Examiner alleges that applicant's compound, "biocompatible" poly-β-1→4-N-acetylglucosamine, is not distinct from the prior art compound. The Examiner also contends that Applicants argument that Okamoto does not disclose using stored platelets is not convincing, since "stored" is a term of relativity and the inherent characteristics of the platelets are not modified by the term "store." For the following reasons, Applicants respectfully disagree.

Anticipation under 35 U.S.C. § 102 requires identity of invention. *Scripps Clinic & Research Fdn. v. Genentech Inc.*, 927 F.2d 1565, 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991). The legal test for anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference in a manner sufficient to enable one skilled in the art to

reduce the invention to practice, thus placing the public in possession of the invention. *W.L. Gore Associates v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 U.S.P.Q. 303, 314 (Fed. Cir. 1983), *cert. denied,* 469 U.S. 851 (1984); *In re Donohue*, 766 F.2d 531, 226 U.S.P.Q. 619 (Fed. Cir. 1985).

For reasons of record, Applicants emphatically disagree that Okamoto anticipates the invention as claimed, particularly in view of the prior amendment that specifies that the poly-β-1→4-N-acetylglucosamine (pGlcNAc) is biocompatible. Nevertheless, without agreeing with the Examiner and merely to advance prosecution, Applicants have amended the claims to clarify that the compositions of claims 1, 8 and 9 and their dependent claims are distinct from the composition of Okamoto. In particular, Applicants have amended the pending independent claims 1, 8 and 9 to recite, in part, that the composition comprises an additive for platelet preservation. Applicants submit that, as used in the instant specification, the term "preserved platelets" would be understood by one of skill in the art to mean a platelet stored with one or more additives for the purpose of preservation. Thus, the amendments to claims 1, 8 and 9 merely clarify and do not limit the scope of these claims.

Okamoto discloses mixing chitin or chitosan suspensions with platelet rich plasma (PRP) or platelets isolated from fresh whole blood (see Abstract; and p. 644, ¶3). However, Okamoto's compositions do not comprise an additive for platelet preservation, as claimed herein. Accordingly, Okamoto does not anticipate any of claims 1, 8 and 9.

As for claim 18, Applicants submit that this claim is not anticipated by Okamoto because, contrary to the Examiner's assertion, Okamoto does not mix his platelets with a calcium chloride solution, as recited in claim 18. Even assuming that a Tyrode's buffer containing calcium chloride is a "calcium chloride solution," as recited by the claim, Okamoto's modified Tyrode's buffer specifically *excluded calcium* (see Okamoto at p. 644, under heading of "Preparation of washed platelet," which states that "[t]he supernatant was removed, and then same volume of *calcium-free* modified Tyrode's buffer was added and suspended" (emphasis added)). Thus, in no way can Okamoto's modified Tyrode's buffer be considered a solution of calcium chloride.

It appears that the Examiner's position is based on a misunderstanding of the term "modified Tyrode's buffer." There is no one way of modifying Tyrode's buffer; rather, each researcher modifies the buffer as he or she sees fit. For example, while the cited reference Male modified Tyrode's buffer to contain 0.14 g/l calcium chloride (see col. 16, line 68), other researchers modified Tyrode's buffer to contain 1.7 mM calcium chloride (see Exhibit

A, Wade *et al.* 2003, Reproduction 125:175-83 at p. 176, top of right column), 0.9 mM calcium chloride (see Exhibit B, Wang *et al.* 2001, Am J Physiol Heart Circ Physiol. 280:H2292-9 at H2293, bottom of left column), or, just like Okamoto, no calcium ions at all (see Exhibit C, U.S. Patent No. 5,446,132 to Reed *et al.* ("Reed"), at col. 11, lines 14-16[1]).

For at least the foregoing reasons, Okamoto does not teach each and every element of independent claims 1, 8, 9 and 18. Accordingly, Okamoto cannot anticipate the claims. Because Okamoto does not anticipate any of independent claims 1, 8, 9 and 18, Okamoto also does not anticipate any claim dependent from these claims.

Applicants therefore respectfully submit that the rejection of claims 1-6, 8-11 and 18 as allegedly being anticipated by Okamoto in light of Veech and Male is in error and should be withdrawn.

II. THE CLAIM REJECTIONS UNDER 35 U.S.C. § 103 SHOULD BE WITHDRAWN

Claims 1-11[2], 15, 17 and 18 remain rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,614,204 to Cochrum ("Cochrum") in combination with U.S. Patent No. 5,858,350 to Vournakis *et al.* ("Vournakis") in light of Veech and Male. Specifically, the Examiner alleges that Cochrum discloses a composition comprising chitin and platelet rich plasma used to induce vascular haemostatic occlusion, and Vournakis teaches the desirability of the use of pure pGlcNAc derived from microalgae in place of pGlcNAc derived from crustacean shells; therefore, the substitution of the purified form of pGlcNAc from microalgae for the impure form of pGlcNAc in chitin in the composition of Cochrum would have been obvious when taken with Vournakis which teaches the advantages of such a substitution.

Claims 1-11[2] and 18 also remain rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Okamoto in combination with Vournakis in light of Veech and Male. Specifically, the Examiner alleges that the motivation for substituting the pGlcNAc of Vournakis for the pGlcNAc of Okamoto is from the secondary reference Vournakis, which

---

[1] Reed also uses another modified Tyrode's buffer with 1 mM calcium, and yet another version of modified Tyrode's buffer with calcium ions and ethylenediaminetetraacetic acid (EDTA) (see col. 11, lines 21-26), which illustrates Applicants' point that there are different ways of modifying Tyrode's buffer. However, it is clear that the modified Tyrode's buffer of Okamoto does not contain calcium chloride (see p. 644, under heading "Preparation of washed platelets.")

[2] Applicants note that claim 7 was cancelled in the Amendment Under 37 C.F.R. § 1.111 filed February 13, 2006.

clearly teaches the superiority in terms of reliability of the use of pGlcNAc derived from microalgae compared to the use of pGlcNAc from marine sources.

For the following reasons, Applicants respectfully disagree with the Examiner's rejections.

To establish a *prima facie* case of obviousness, the teachings of the prior art must provide one of ordinary skill in the art with some suggestion or motivation to make the claimed composition. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). The relevant inquiry is whether the prior art suggests the invention and whether the prior art provides one of ordinary skill in the art with a reasonable expectation of success. *In re O'Farrell*, 853 F.2d 894, 903, 7 U.S.P.Q.2d 1673, 1681 (Fed. Cir. 1988). Both the suggestion and the reasonable expectation of success must be found in the prior art. *In re Vaeck*, 947 F.2d 488, 495, 20 U.S.P.Q.2d 1438, 1444 (Fed. Cir. 1991). When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998). Further, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 985, 180 U.S.P.Q. 580, 583 (C.C.P.A. 1974).

"Measuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field." *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999), abrogated on other grounds, citing to *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 312-13 (Fed. Cir. 1983). In particular, the Examiner cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988). Care must be taken to avoid hindsight reconstruction by using Applicants' disclosure "as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result" of the claims in question. *Grain Processing Corporation v. American Maize-Products Company*, 840 F.2d 902, 907, 5 U.S.P.Q.2d 1788, 1792 (Fed. Cir. 1988), citing *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1012, 217 U.S.P.Q. 193, 199 (Fed. Cir. 1983).

1. The Rejection of Claims 1-6, 8-11, 15, 17 and 18 Over Cochrum in Combination with Vournakis in view of Veech and Male Should be Withdrawn

As discussed above, without agreeing with the Examiner's rejection and merely to advance prosecution, Applicants have amended claims 1, 8 and 9 to clarify that the composition comprises an additive for platelet preservation. Likewise, Applicants have amended claim 15 to clarify that the composition comprises an additive for platelet preservation. Also, as noted above, claim 18 has been amended to clarify that the method is performed *ex vivo*. None of the references cited by the Examiner, whether alone or in combination, teach or suggest the subject matter of the present claims.

Cochrum relates to *in situ* methods for producing vascular occlusion agents (see Abstract and col. 3, lines 24-29). The methods of Cochrum produce a gelled polymer as the polymer is injected into the bleeding vessel. In certain embodiments, platelet rich plasma is also used (see Abstract and col. 1, lines 8-20).

As to claims 1-6, 8-11, 15, 17 and new claims 22-24, Cochrum does not teach or suggest a composition comprising an additive for platelet preservation. Specifically, Cochrum's focus is the *in situ* production of a wound dressing, and provides no reason for the composition produced by his methods to contain additives for platelet preservation. For example, Cochrum does not teach or suggest storage of the isolated PRP or platelets for any time period between isolation and use, much less teach or suggest the addition of an additive to the isolated PRP or platelets for preservation between isolation and use. Nor does Cochrum teach or suggest producing a composition comprising a PRP and an additive for platelet preservation. In contrast, the compositions of claims 1, 8, 9 and 15 and the gel produced by the method of new claims 22 and 23 all comprise an additive for platelet preservation. Cochrum provides no motivation for a composition comprising such an additive. Accordingly, Cochrum does not render obvious any of claims 1, 8, 9, 15, 22 and 23, and for this reason cannot render obvious any claim dependent therefrom.

Claim 18 specifies a method that is performed *ex vivo* in which a population of isolated platelets is mixed with a biocompatible pGlcNAc fiber slurry in the presence of a 10% calcium chloride solution. This claim is distinct from all the embodiments described in Cochrum in which PRP or concentrated plasma is used. In particular, Cochrum describes three embodiments for vascular occlusion using biopolymer and concentrated plasma (see col. 10, lines 44-54). In the first embodiment, the biopolymer is mixed with concentrated plasma, and "[t]he polymer gel sphere form on site and upon mechanical contact with the

vessel walls and in the presence of calcium ions," which are not exogenously provided (see col. 10, lines 61-63). In the second embodiment, the biopolymer is dropped into a 1-3% calcium solution to form biopolymer droplets, which are then mixed with concentrated plasma (see col. 11, lines 5-16). Thus, in the second embodiment of Cochrum, the biopolymer is not mixed with PRP in the presence of 10% calcium chloride, as claimed herein. Finally, in the third embodiment of Cochrum in which concentrated plasma is used, the biopolymer is mixed with 0.1% calcium chloride solution (see col. 11, lines 38-41), not 10% calcium chloride solution as recited in claim 18. Moreover, Cochrum does not teach or suggest the method of claim 18, as Cochrum provides no motivation to raise the calcium concentration to 10%. In fact, in Cochrum's preferred mode of embodiments, the 1.7% (see col. 11, lines 8-11) concentration of calcium is almost half the upper limit of 3% and almost six-fold less than the calcium concentration of claim 18. In the third embodiment of Cochrum, the calcium concentration is 0.1%. There is no discernable reason to raise the calcium concentration above 3%, let alone to 10%. Accordingly, Cochrum does not render obvious claim 18.

Vournakis does not remedy the deficiencies of Cochrum. Vournakis is directed to various medical uses of a biomedically pure pGlcNAc, including its use as a haemostatic device (see Abstract; and col. 2, lines 61-62). While Vournakis teaches the application of a pGlcNAc to a patient to stop bleeding, the reference provides no suggestion or motivation to form a composition comprising pGlcNAc and any platelets, much less provide suggestion or motivation to make a composition comprising pGlcNAc, preserved platelets and an additive for platelet preservation, as recited in claims 1, 8 and 9; to use such a composition, as recited in claim 15; or to produce a gel by mixing pGlcNAc and PRP in the presence of a 10% calcium chloride solution, as recited in claim 18. Accordingly, Vournakis, whether alone or in combination with Cochrum, fails to render obvious the invention as claimed in claims 1, 8, 9, 15 and 18, and their dependent claims.

Veech and Male also do not remedy the deficiencies of Cochrum alone or in combination with Vournakis. Veech relates to electrolyte solutions and *in vitro* use thereof (see Abstract), and Male relates to the use of platelets loaded with diagnostic or therapeutic-containing liposome (see Abstract). Neither reference teaches or suggests a composition comprising pGlcNAc, PRP and an additive for platelet preservation (claims 1, 8 and 9), the use of such a composition (claim 15), or the manufacture of a gel by mixing pGlcNAc and PRP in the presence of a 10% calcium chloride solution (claim 18). Since none of the

references cited by the Examiner, alone or in combination, teach or suggest the claimed compositions and methods, the rejection is in error.

For the forgoing reasons, Applicants respectfully submit that the rejection of claims 1, 8, 9, 15 and 18, as well as their dependent claims, over Cochrum in combination with Vournakis in view of Veech and Male is in error and should be withdrawn.

2. The Rejection of Claims 1-6, 8-11 and 18 Over Okamoto in Combination with Vournakis in view of Veech and Male Should be Withdrawn

For the reasons explained in the discussion of anticipation above, Okamoto does not make or use a composition comprising pGlcNAc, PRP and an additive for platelet preservation, as recited in claims 1, 8 and 9. Moreover, Okamoto does not teach or suggest such a composition, as there is no discernible reason in Okamoto to store platelets with an additive for platelet preservation.

In addition, for the reasons explained in the discussion on anticipation above, Okamoto does not make a gel by mixing pGlcNAc and PRP in the presence of a 10% calcium chloride solution. Moreover, Okamoto does not teach or suggest the use of any calcium, let alone a 10% calcium chloride solution. Quite the contrary, by choosing to modify Tyrode's buffer to remove calcium, Okamoto teaches away from the invention of claim 18, which specifies the use of a 10% calcium chloride solution.

In view of the foregoing, Okamoto (even taking into account the teaching of Veech and Male) does not render obvious any of claims 1, 8, 9 and 18 or their dependent claims.

Vournakis does not remedy the deficiencies of Okamoto. As explained above, Vournakis is directed to biomedically pure pGlcNAc. With respect to claims 1, 8 and 9 and their dependent claims, there is no motivation provided in Vournakis to make or use composition comprising pGlcNAc, PRP and an additive for platelet preservation. As to claim 18, Vournakis does not provide any motivation to make a gel by mixing pGlcNAc and PRP in the presence of a 10% calcium chloride solution. In addition, contrary to the Examiner's arguments on p. 6 of the Office Action, there is no motivation to use a biologically pure pGlcNAc in the methods of Okamoto, since Okamoto's studies are for research purposes only and Okamoto lacks any suggestion for biomedical applications for his methods or compositions.

Thus, Applicants respectfully submit that the rejection of claims 1, 8, 9 and 11, as well as their dependent claims, over Okamoto in combination with Vournakis in view of Veech and Male is in error and should be withdrawn.

CONCLUSION

Applicants respectfully request entry of the foregoing amendments and consideration of the foregoing remarks. Applicants believe that all the pending claims are in condition for allowance. Withdrawal of the Examiner's rejections and allowance of the application are respectfully requested.

Respectfully submitted,

Date: March 21, 2007

Laura A. Coruzzi by: Muna Abu Eideh (Lack) 30,742
Laura A. Coruzzi (Reg. No.)

JONES DAY
222 East 41st Street
New York, New York 10017
(212) 326-3939

Enclosures